

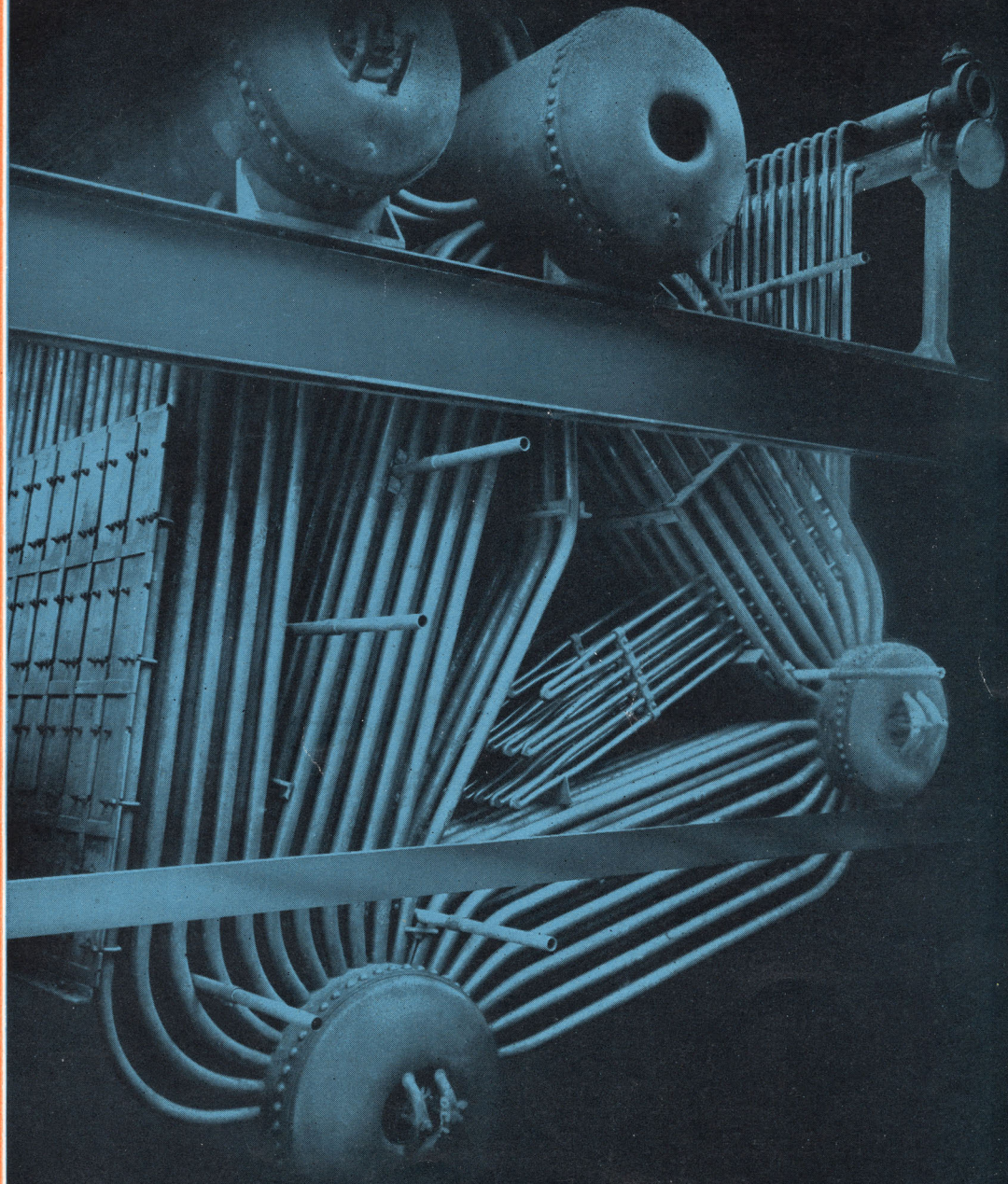
The PROOF



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The PROOF



- is in the testing

THE following statements and charted test summarize the standard A. S. M. E. boiler test conducted under the supervision of Professor Charles A. Shoop of the Experimental Engineering Department of the University of Minnesota. This test was made on one of the two 553 HP **Bros-Wetherbee** Bent Tube Watertube Boilers at the Geo. A. Hormel plant at Austin, Minnesota.

The Boiler was equipped with Vulcan Soot blowers and Elesco superheaters and a six retort, 21 tuyere Taylor stoker.

The flue gas temperatures, draft losses, water levels, steam moisture content and efficiency of the Boiler were the primary objects of the test.

The following summarizes the main characteristics of the Boiler under actual operating conditions:

Lower Flue Gas Temperatures

Correct application of the laws of heat transmission are basically responsible for the low flue gas temperatures of the **Bros-Wetherbee** Bent Tube Boiler. Passing the gases across the tubes rather than parallel to the tubes has been scientifically proven to be the more efficient and economical method of absorbing heat. The **Bros-Wetherbee** Boiler has been designed and constructed with this thought solely in mind.

The principle of cross flow of gases to the tubes is preeminent in the design of the **Bros-Wetherbee** Boiler. Three passages of gases at right angles to the tubes (all in the high temperature areas) increase the heat absorption ability of the Boiler to the highest degree.

The **Bros-Wetherbee** Boiler, according to the chart of the test, shows a temperature average of flue gases of 100° F. lower than temperatures secured on other standard boiler tests.

100° lower flue gas temperatures insure a 3% saving in fuel costs.

Draft Losses

The design of the **Bros-Wetherbee** Watertube Boiler necessitates a gas travel of much greater length than any other bent tube boiler.

Ordinarily with such long gas travel higher draft losses would be expected but the careful designing of the baffling and the strategic placing thereof enables the gases to sweep through the Boiler with a constant velocity and with minimum friction.

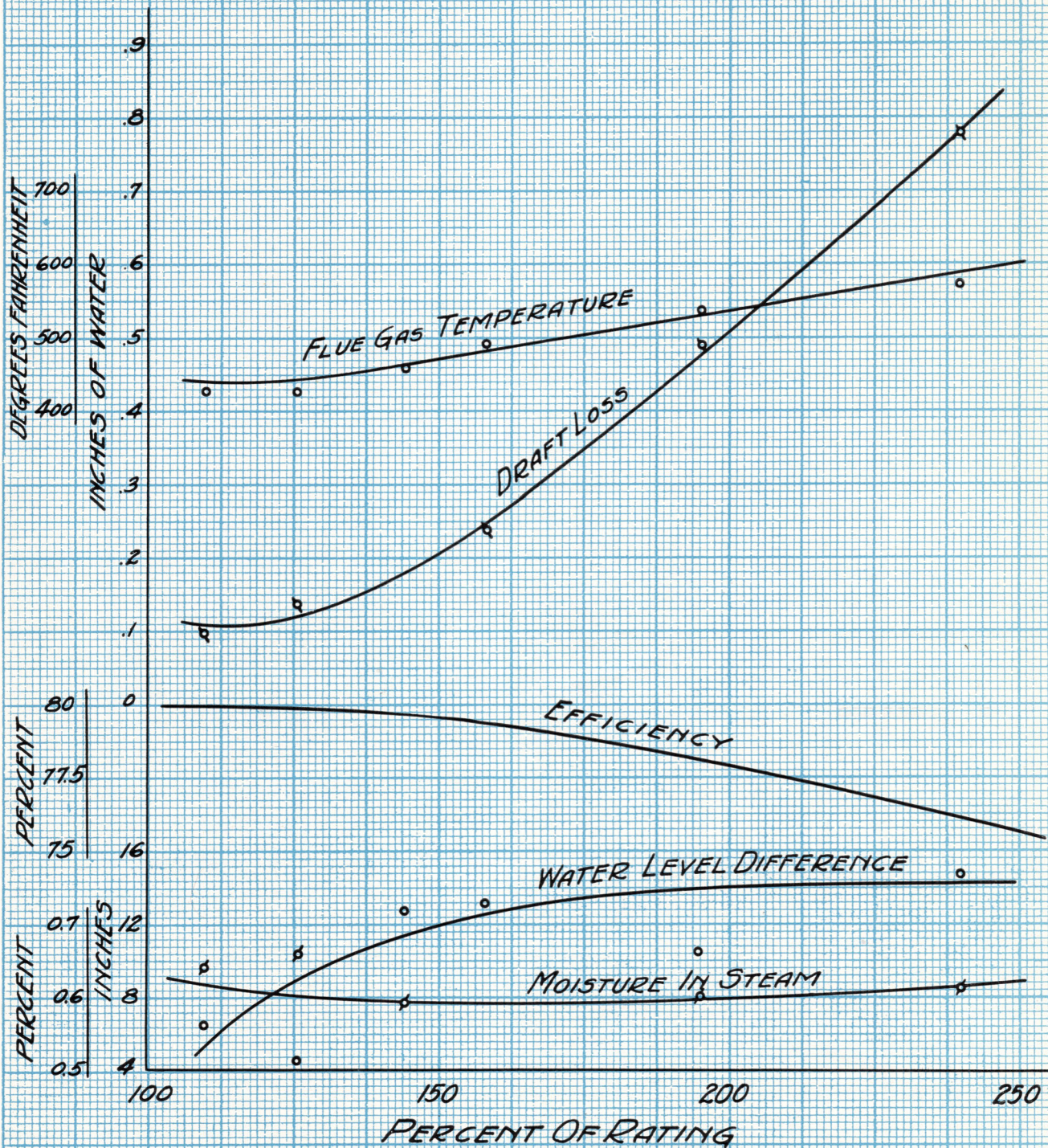
The draft losses, as indicated by the chart, were less than are ordinarily found in four drum boiler installations and were well within the regular draft loss guarantees.

Constant Water Level Difference

Water level difference, indicating the relationship between the water levels in the two steam drums, is an index of good, sound boiler design.

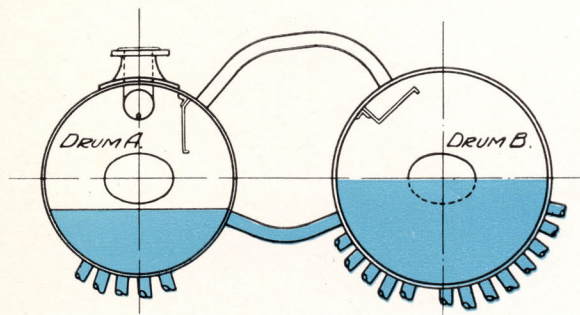
In this test, gauge glasses were installed on both steam drums to study the water level dif-

CHART OF TEST
BROS WETHERBEE WATERTUBE BOILER
INSTALLED AT
GEORGE A. HORMEL CO., AUSTIN, MINN.



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WITH
MULTIPLE RETORT STOKER

ference. The **Bros-Wetherbee** Boiler maintained a practically constant water level difference above 125% rating. At all ratings water not only completely covered the tubes in the rear steam drum, but also covered a large



portion of the shell. This coverage provides a thorough distribution of feed water in all the economizer tubes and prevents the shell from crystallizing.

Constant water level difference insures constant water level.

Dry Steam at 240% Rating

The ability of a boiler to produce dry steam is principally dependent upon the steam liberating area and correct mechanical steam baffling. **Bros-Wetherbee** Boilers are designed to produce dry steam.

The large steam drums—oversized when compared to other boilers—give sufficient steam liberating area to enable the steam to separate from the water with a very low moisture content. Subsequent use of intelligent

steam baffling reduces the moisture content in the steam to a minimum.

As shown by the chart of the test, the **Bros-Wetherbee** Boiler has a remarkably low average of .6 of 1% moisture content in the steam from 100% to 240% rating.

BROS-WETHERBEE Boilers produce dry steam at all ratings.

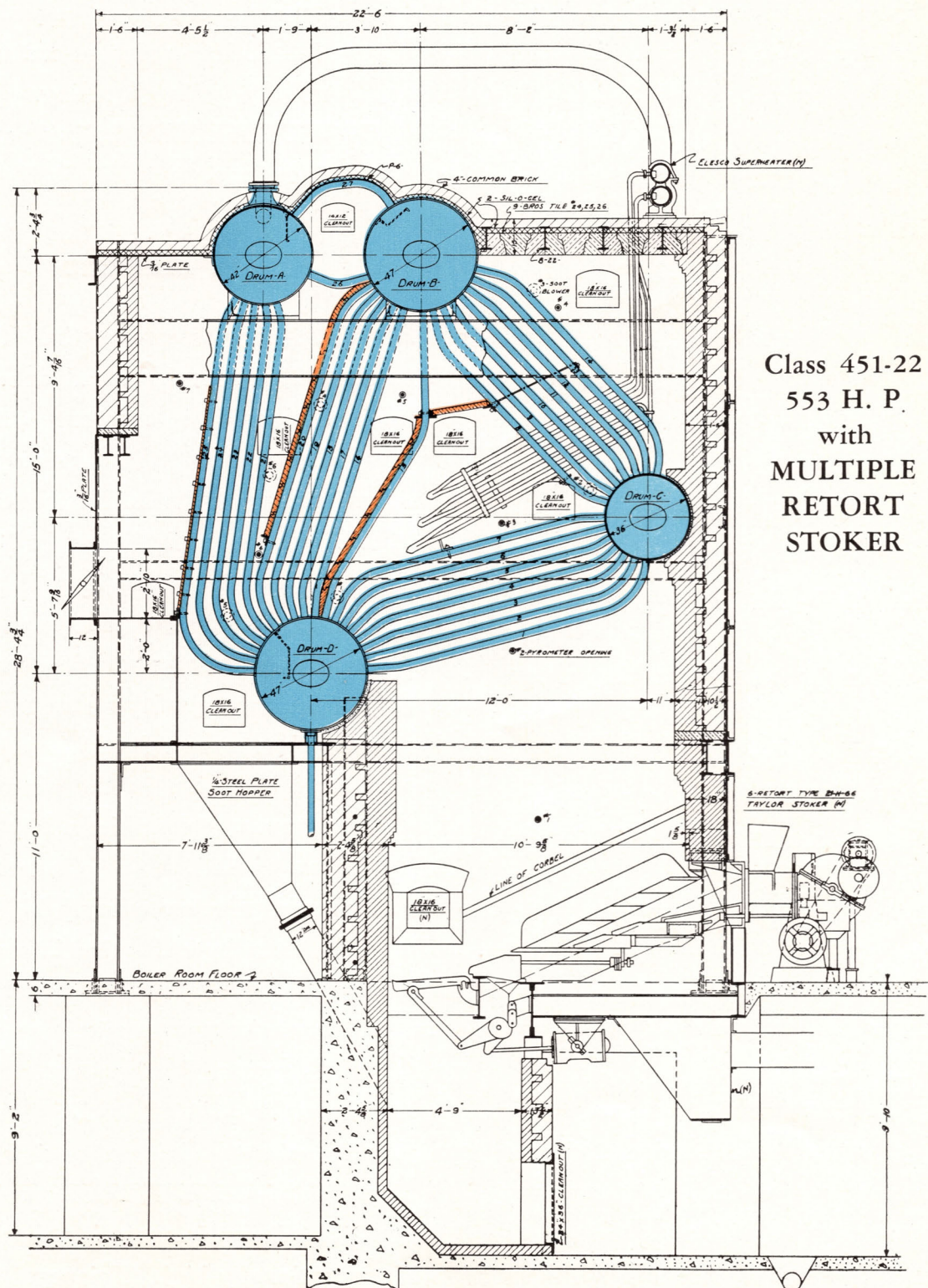
High Efficiency

All these factors prove that the **Bros-Wetherbee** Boiler is far in advance of competitive designs. Its constant water level proves the necessity of minimum attention even under varying loads. Its constant water level difference is a big factor in holding an even water level and also in prolonging the life of the rear steam drum and tubes. Its clean and exceptionally dry steam insures a steady supply of constant quality steam to the superheater or prime mover. Its draft requirements permit its installation in the average boiler room under average conditions.

By reason of its low flue gas temperatures the efficiencies are exceedingly high. Inspection of the chart indicates that in combination with any good multiple retort stoker the guaranteed efficiencies will be all above 75%, even up to 250% rating. Furthermore, at the usual operating ratings of 100% to 175% the efficiencies will be close to if not more than 80%.

The BROS-WETHERBEE Boiler combines all the desirable operating characteristics with exceptionally high efficiency.

Geo. A. Hormel Co., Austin, Minn.



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